BEFORE THE
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Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Annual Local and Flexible Procurement Obligations for the 2016 and 2017 Compliance Years	R.14-10-010 (Filed October 16, 2014)

PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E) COMMENTS ON EFFECTIVE LOAD CARRYING CAPACITY AND FLEXIBLE CAPACITY REQUIREMENT TOPICS

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In accordance with the November 10, 2016 e-mail ruling of assigned Administrative Law Judge Peter Allen, Pacific Gas and Electric Company ("PG&E") provides its comments on effective load carrying capacity and flexible capacity requirement resource adequacy ("RA") topics. These comments focus on presentations made during the November 8 workshop on effective load carrying capacity ("ELCC") and the November 9 workshop on flexible capacity requirements ("FCR").

PG&E's comments are focused at a general level, and do not contain specific proposals. Consistent with the schedule set forth in the September 13, 2016 *Assigned Commissioner and Administrative Law Judge's Phase 3 Scoping Memo and Ruling* ("Phase 3 Scoping Memo"), PG&E will provide any specific proposals on these topics on December 16, 2016.

Summarizing PG&E's comments briefly:

- At this point, the California Public Utilities Commission ("Commission") schedule and parties' efforts should target adoption and implementation of a durable FCR program for the 2019 RA year;
- The Commission and the California Independent System Operator ("CAISO") efforts to refine the FCR program should be coordinated;
- At this point in time, PG&E is not convinced that the Southern California Edison Company ("SCE") FCR proposal is headed in the right direction;

- The day ahead versus real-time load forecast uncertainty analyzed by the CAISO's Department of Market Monitoring ("DMM") may not need to be addressed by a flexible RA requirement;

- The real-time forecast uncertainty associated with intermittent generation and load (real-time forecast is not expected to exactly equal real-time actual), analyzed by the DMM, is more likely needed to be addressed by a flexible RA requirement;

- Continued analysis of the availability and bidding patterns of flexible resources in the CAISO markets will help to inform the development of a durable FCR program;

- Based on the daily load shapes, it is appropriate to require one start per day for a flexible resource rather than two during summer months;

- PG&E supports the Energy Division's continuing efforts to develop a cost causation-based allocation of the FCR requirement to Commission-jurisdictional load serving entities (LSEs);

- The parties should strive to develop a simple method for determining monthly ELCC values for resources that does not require separate ELCC calculations for each month; and

- ELCC-based RA values for renewable resources should change over time, as the supply portfolio evolves.

I. DISCUSSION

A. Durable Flexible Capacity Requirement Topics

1. At This Point, It Appears That It Will Not Be Possible To Adopt A Durable Flexible Capacity Requirement Framework For The 2018 Resource Adequacy Year

Several participants to the workshops suggested that, based on the current status of the proceeding, it is not feasible to target adoption of a durable FCR framework for the 2018 RA year. PG&E agrees. There remains a wide divergence of ideas, and there does not appear to be a consensus to support the one specific proposal put forward at the workshops by SCE. That said, PG&E encourages the Commission to continue efforts in order to adopt a more durable framework in time for the 2019 RA year.

That would follow a similar path taken by the ELCC methodology for establishing the RA value of wind and solar resources. Despite the best efforts of the Energy Division and the parties, it was not possible to adopt an ELCC approach for 2017. However, due to the continued efforts by the Energy Division and contributions by Calpine Corporation ("Calpine"), among others, it appears that the Commission may be able to adopt an ELCC approach one year later, for the 2018 RA year.

2. It Is Important That The Commission's And The California Independent System Operator's Efforts To Refine The Flexible Capacity Program Be Coordinated

At the workshop, the CAISO described six topics that, from its perspective, should be addressed in any move to a more durable FCR framework.[1] The CAISO stated that it had just issued a supplemental issue paper in its Flexible Resource Adequacy Criteria and Must-Offer Obligation Phase 2 ("FRACMOO 2") stakeholder process recommending how to address those topics.

From PG&E's perspective, it is important that the Commission's and the CAISO's resource adequacy programs be consistent, and complementary. PG&E will participate actively in both this proceeding and the CAISO's FRACMOO 2 stakeholder process. PG&E encourages the Commission and the CAISO to coordinate to ensure that this proceeding and FRACMOO 2 are closely aligned, so that the outcomes are consistent and complementary.

3. PG&E's Comments On Southern California Edison Company's Flexible Resource Adequacy Proposal

During the workshops, SCE put forth a proposal to refine the current FCR framework by specifically authorizing the CAISO to conduct an annual "deficiency tests" on the FCR portfolio provided by LSEs, and for the CAISO to directly obtain additional FCR resources if a deficiency

[1] CAISO Presentation, pp. 4-5.

is identified, regardless of whether all of the LSEs have met their FCR obligations.[2] It is PG&E's understanding that SCE is proposing this as a durable FCR framework.

At this time, PG&E has not been convinced that the SCE approach should be adopted. PG&E has several concerns. First, if the current method for establishing FCR obligations, based on three-hour ramps, is not accurately identifying flexible needs to such a degree that back-up procurement by the CAISO is expected to be needed on a periodic basis, then it may not make sense to maintain an FCR framework built around meeting the three-hour ramps.

Second, PG&E is concerned with the lack of specificity regarding the CAISO's deficiency tests. If the SCE approach were to be considered, then the CAISO deficiency test would need to be precisely defined.

Third, PG&E is concerned that the SCE approach encourages a "race to the bottom." That is, it encourages LSEs to provide the least flexible resources, among those resources that meet the technical definition to provide flexible capacity, to the CAISO. LSEs would have the incentive to do this feeling safe in the knowledge that if more (or different) flexible capacity were needed, the CAISO would obtain that capacity through its backstop mechanism. Indeed, under current cost allocation methodology, the LSE providing minimally flexible resources would only be responsible for a portion of the cost of the additional flexible capacity obtained by the CAISO carrying out its backstop role.

In sum, PG&E is not convinced at this time that the SCE proposal, as described in the recent workshop, is heading in the right direction to establish a durable FCR framework.

4. PG&E's Comments On The Analysis Presented By The Department Of Market Monitoring

PG&E greatly appreciated the CAISO DMM's presentation during the FCR workshop. The thoughtful conversation about renewable output and load uncertainties was helpful to creating a common understanding of the challenges that the CAISO faces when attempting to

[2] SCE Presentation, pp. 1-2.

balance supply and demand. The DMM's use of historical data provides all the interested parties with a strong foundational starting point.

a. Day-Ahead Versus Real-Time Forecast Uncertainty May Not Give Rise To The Need For A Flexible Resource Adequacy Forward Capacity Requirement

PG&E benefited from the DMM's explanation of concerns associated with the uncertainty between the day-ahead net load schedule and the net load changes in real-time relative to that schedule.[3] These concerns are an important concept to discuss as the Commission attempts to create requirements to provide the CAISO a portfolio of resources with the appropriate operational flexibility.

However, PG&E questions if this uncertainty is best addressed through RA, a forward capacity product. From PG&E's perspective, it is not a foregone conclusion that all issues related to operational flexibility should be addressed in the RA program. In particular, it is PG&E's view that the day-ahead to real-time uncertainty concerns may be more properly considered as unit commitment issues in the CAISO day-ahead market, concerns that may be more efficiently addressed through day-ahead market solutions.[4]

b. Real-Time Forecast Uncertainty Associated With Intermittent Generation And Load Is More Likely To Continue To Require A Flexible Resource Adequacy Capacity Requirement

The DMM also explained issues that the CAISO is having when actual net load that occurs during real-time intervals is significantly different than expected when the real-time market was run.[5] Earlier, the CAISO discussed these issues in depth in its July 21, 2016 Market Planning and Performance Forum.[6] Here, while market changes might help to address the current concerns, from PG&E's perspective this particular issue justifies a forward capacity

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[3] DMM Presentation, p. 7.

[4] *See generally*, PG&E Presentation.

[5] *See*, DMM Presentation, p. 10.

[6] CAISO Market Planning and Performance Forum –Presentation on July 21, 2016, Slides 41-55. http://www.caiso.com/Documents/Agenda-Presentation-MarketPerformance-PlanningForum-Jul21_2016.pdf.

product, as there is a clear link between net load forecast error and the "CPS1" scores the CAISO has recently experienced.[7]

c. Continued Analysis Of The Availability Of Flexible Capacity In The Markets, And Its Bidding Behavior, Will Be Helpful

PG&E supports the DMM continuing to analyze the average day-ahead and real-time availability of flexible capacity, and the average hourly real-time economic bids by generation type.[8] This information would be particularly helpful if the data could be further divided by whether the resources were committed as RA and/or shown as flexible RA resources.

Understanding the economic bidding behavior of non-RA resources and non-flexible RA resources would provide useful information to understand whether energy market signals alone provide the incentives for economic bidding. If so, this would argue in favor of SCE's proposal to have a single must-offer obligation for all forms of RA capacity.

5. Incremental Improvements To The Existing Flexible Resource Adequacy Framework

As discussed above, PG&E understands that any durable definition of FCR is unlikely to be in place for the 2018 RA year. However, PG&E supports exploring incremental changes to the current FCR program that could be in place for the 2018 RA year.

a. An Incremental Improvement To The Flexible Resource Adequacy Program, To Require One Start Per Day In The Summer Months, May Be Appropriate For The 2018 Resource Adequacy Year

At the workshops, the Energy Division observed that during the summer months, the daily load shape does not include two distinct, significant ramps. Instead, it has one longer load ramp.[9] Given this, it is not clear that the current requirement that a resource be able to provide

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[7] Two new market changes will help to improve this issue: the flexible ramping product; and a change in how the CAISO sets its regulation requirements. The CAISO is expected to discuss its changes to how operators set Regulation requirements during its December 7th Market Planning and Performance Forum.

[8] DMM Presentation, pp. 8, 11.

[9] Energy Division Presentation (Flexible Capacity – Cost Causation and Calculation of the Flex Requirement), p. 8.

two starts per day is needed during the summer month. Therefore, PG&E supports adopting a one start per day requirement for Category 1 resources in the summer months.

b. PG&E Supports The Energy Division's Continued Evaluation Of Cost Causation-Based Allocation Of The Flexible Capacity Requirement To Jurisdictional Load Serving Entities

At the workshops, the Energy Division described its ongoing efforts to develop a robust cost causation-based methodology, based on the current three-hour ramp methodology, for allocating the FCR obligation established by the CAISO to the various Commission-jurisdictional LSEs.[10] PG&E encourages and supports the Energy Division's efforts. As it has in the recent past, PG&E continues to encourage the adoption of a cost causation-based methodology for allocating the FCR obligation to Commission-jurisdictional LSEs.

B. Effective Load Carrying Capacity

1. While PG&E Generally Supports The Direction In Both The Energy Division And Calpine's Proposals, PG&E Recommends That A Simpler Approach Be Developed To Derive Monthly Qualifying Capacity Values From Annual Values

As has been observed by several parties, the ELCC approach is essentially an annual approach. This is because the reliability standard on which the ELCC approach is based, loss of load expectation ("LOLE"), is an annual concept.

In order to use ELCC for Commission RA purposes, there needs to be some development of monthly RA values. Based on their workshop presentations, both the Energy Division and Calpine propose to do that by artificially developing monthly LOLEs, and then carrying out monthly ELCC calculations.[11]

PG&E recommends against this approach. First, it is completely artificial in that there is no agreed upon industry concept of how an annual LOLE should be converted into monthly

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[10] Energy Division Presentation (Flexible Capacity – Cost Causation and Calculation of the Flex Requirement), pp. 3-7.

[11] Energy Division Presentation (Monthly LOLE and ELCC), pp. 16-20; *See*, Calpine Presentation, p. 13.

LOLEs. Second, it requires a significant amount of analysis with an ELCC calculation for each month.

PG&E might support the additional work the proposals require if the result would lead to a more theoretically sound result than other, less complicated approaches. But the proposed approaches do not. Because the process starts with relatively arbitrary monthly LOLE values, the resulting monthly ELCC values are relatively arbitrary, as well. Furthermore, arbitrarily equalizing a LOLE across all months would overvalue the non-summer reliability contribution of wind and solar resources when loss of load events are unlikely to happen, and conversely would undervalue the summer reliability contribution of wind and solar resources.

In light of this, PG&E supports the direction suggested earlier by the Energy Division of using some relatively straightforward monthly set of multipliers or caps, based on the monthly characteristics of a resource, to derive the resource's monthly ELCC-based values from its annual ELCC value. At this point in time, PG&E is not prepared to endorse the method suggested by the Energy Division of using the resource's monthly exceedance value as a cap on the resource's monthly ELCC value. While that may not be the set of multipliers/caps ultimately adopted, PG&E does endorse the direction set by the Energy Division's proposal.

2. The Resource Adequacy Value Of Renewable Resources Should Change Over Time, As The Renewable Portfolio Evolves

PG&E agrees with the point Calpine made at the workshops that the aggregate ELCC value assigned to all renewable resources should sum to the ELCC value of the portfolio.[12] The sum of the values for the individual resources should neither overstate nor understate the value of the portfolio in the aggregate.

As the supply portfolio changes to include more renewable generation of a specific type, its ELCC value (on a per-megawatt basis), is expected to decrease. This gives rise to the question of whether ELCC-based RA values for a given resource should be determined at a

[12] *See*, Calpine Presentation, p. 16.

given point in time and not altered subsequently, or should they be revised whenever ELCC values are recalculated. That is, should ELCC-based RA values be "vintaged"?

PG&E recommends that ELCC-based RA values not be vintaged, but rather that a resource's RA value be updated when ELCC updates are carried out. This approach has the benefit of being substantially simpler to administer. Further, PG&E does not anticipate that this would create a significant commercial hardship, in that neither the purpose nor the pricing of any particular renewable resource was likely to have been primarily RA focused.

Respectfully submitted,

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